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**Two Theories on the Test Bench: Internal and External Validity of the Theories of
Ronald Inglehart and Shalom Schwartz**

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Abstract

In the last decades value research has produced a vast number of theoretical concepts. However, it is unclear how the different value theories relate to each other. This study makes a first step toward a systematic comparison of value theories. It focuses on the individual level of the two approaches that are, at present, probably the most prominent in international research - the theory of basic human values of Shalom Schwartz and the postmodernization theory of Ronald Inglehart. Using data from the World Value Survey and the European Social Survey for West Germany we assess both the internal and the external validity of the two accounts. The results indicate that both value theories have different strengths and weaknesses. Whereas the Inglehart account has lower internal and weaker construct validity, the Schwartz account is somewhat less consistent in its predications. Nevertheless, both value conceptions are able to explain a substantial share of variation in specific attitudes and behavior.

Key words: Inglehart; Schwartz; confirmatory factor analysis; World Value Survey (WVS); European Social Survey (ESS); theory comparison

1. Introduction

The empirical research of the last decades has produced an impressive number of different value orientations. Sometimes values are equated with more or less abstract, positively evaluated objects or states: Health, family, work, religion and many other entities are therefore called values. Sometimes values are related to basic human needs, like the needs for security, affiliation, or love. In the classical tradition values are defined as standards such as the values of freedom, equality, justice, or fairness. Apart from these principle disagreements about the concept of values, there are differences with regard to specific values. Two authors may use the same value name but understand and operationalize the underlying value differently or they assign different value names to very similar sets of indicators.

Different value researchers do not completely ignore each other but they quote the studies of others selectively and usually only in those cases where the findings of the other seem to support their own view.¹ Comprehensive studies of the relationships between different value approaches are completely lacking. It is almost certain that problems of discriminant validity would arise if similar values from different theories were included in one and the same study (Jagodzinski 2004). International comparative studies so far do not allow a comprehensive assessment of advanced value theories. It is true that the World Value Survey 2005 also includes ten items of the Portrait Value Questionnaire of Schwartz in addition to the indicators of Inglehart's value dimensions. However, it can already be anticipated that ten items cannot adequately cover the ten broadly defined value orientations of Shalom Schwartz, which is discussed in more detail in sections 3.1 and 3.2. Survey research may be reluctant to include the measurement instruments of different value theories into their questionnaires partly because they do not want to confront the respondents with batteries of similar questions and partly because it would increase the costs of such a survey immensely. Therefore, at the moment it cannot be said whether value research violates Occam's principle and multiplies entities, in this case: values, beyond necessity. It is very likely that it does but no one can presently prove this.

In order to overcome the present situation, this paper attempts to systematically compare two very prominent value theories, the theory of basic human values of Shalom Schwartz and the postmodernization theory of Ronald Inglehart (e.g. 1977). Both authors present two-level theories, which distinguish between macro-level cultural values and

¹ Hofstede (2001), in his presentation of individualism/collectivism refers to Triandis as well as to Inglehart's post-materialism. Similarly, Inglehart and Welzel (2005) identify autonomy as the common theme of individualism (Triandis) and self-direction (Schwartz) and self-expression values, but they do not analyze these relationships in detail.

individual-level value orientations. It is true, the focus of Inglehart's (e.g. 1977) research has recently shifted to such an extent to the macro-level that the micro-level component of his theory can be overlooked. As the postmaterialism theory is only rudimentarily integrated into the new, more encompassing approach, one may gain the impression that we actually deal with two theories, a micro-level theory of postmaterialism and a macro-level theory of self-expression values. This is not the view of Ron Inglehart, however. Even his publications on macro-level cultural change persistently emphasize that cultural change is the result of micro-level value change (see, e.g., Inglehart, 1997; Norris and Inglehart, 2004; Inglehart and Welzel, 2005). The analysis of Inglehart and Baker (2000) further shows that cultural values and individual-level value orientations are operationalized with the same set of indicators. Due to space limitations, we have to confine ourselves exclusively to the key concepts of the individual-level value orientations in both approaches, which for the sake of brevity will be simply called values.

A comparison of two value theories should, first of all, investigate the internal validity of the measurement. Recent methodological studies on the measurement instruments of the ESS give important insights into this field, particularly also into problems of measurement equivalence, but they investigate only rudimentarily the predictive power of the underlying concepts. This is largely consistent with the strategy of Schwartz and his colleagues who mainly concentrated on the internal structure and validity of the values and only sparsely examined the relations between values and external variables. As long as this part of the theory remains less developed, however, the theory is of limited interest for the nonexperimental social sciences, which have always seen the main attraction of value theories in their promise to explain a broad range of beliefs, attitudes, and behaviors by a limited number of values. A comparison of value theories can, therefore, not be based on internal validity alone (Jagodzinski and Manabe, 2009; Opp and Wippler, 1990). Relationships with external variables, which either predict values or are predicted by values, are at least as important.

As both theories relate values to a set of common external variables, the strength and signs of these relationships will be the second criterion, which for the sake of brevity is called external validity of the theory. A theory is externally valid if all relationships have the theoretically predicted signs and the explained variance in all dependent variables is high.²

² Clearly, the external validity is estimated under the assumption that the model is correctly specified. As long as there is no empirical evidence, however, that low external validity is a result of spurious non-correlations, they indicate problems of the examined theory.

Though the predictive power of the values is in the focus of interest, the paper will also investigate the effect of selected exogenous variables on values.

Besides internal and external validity, the parsimony is used as a third standard of comparison. If two value theories have more or less the same explanatory power, the one with fewer values is more parsimonious and, therefore, superior to the other. So we have three criteria which we apply step by step to the two value theories. Before we do this, we very briefly discuss communalities and differences in the theories of Ronald Inglehart (1977) and Shalom Schwartz (1992, 1994). The internal and external validity are examined in Section 3. As the study has to rely on two separate surveys, we use the European Social Survey (ESS) 2004 for measuring the values of Schwartz and the World Value Survey (WVS) 2005 for measuring the values of Inglehart. Needless to say, the external validity can only be assessed with regard to those external variables which are at least similarly measured in both surveys. Results are summarized and discussed in the last Section

2. The Two Value Theories – Similarities and Differences

Space limitations do not allow a comprehensive discussion of the two theories. The values of both theories will be very briefly described and compared in Subsection 2.1. The basic features of the measurement models are examined next (Subsection 2.2). The last Subsection discusses the relationship between values and a subset of external variables, which are similarly measured in ESS 2004 and WVS 2005. These relationships are summarized in a set of hypotheses (Subsection 2.3).

2.1 The Value Concepts

a) Schwartz. The value theory of Schwartz proposes **ten** basic values that are intended to include all the main values recognized across cultures in the world (for a new extension to more than ten values, see Schwartz and Vecchione, 2011): power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. These values and the motivations behind them are presented in Table 1. They are derived from three universal requirements of human beings: needs as biological organisms, coordinated social interaction, and survival and welfare needs of groups (Schwartz, 1992, 1994, 2007). Furthermore, Figure 1 displays the relations between the values. Two important features may be observed. First, some values oppose each other whereas others are congruent with each other. Pursuing tradition and conformity may be congruent. However, pursuing tradition values may oppose following self-direction values. Second, the values are grouped behind two higher order dimensions. The first higher order dimension contrasts self-

transcendence with self-enhancement values. The second higher order dimension opposes openness to change with conservation values.

Table 1 about here

Figure 1 about here

b) Inglehart. Inglehart (1977) relates values to human needs. The first version of his approach, the so-called postmaterialism theory, reduced Maslow's hierarchy to two basic needs, which are called materialistic and postmaterialistic. They were conceptualized as poles of a unidimensional value continuum. Materialism becomes manifest in a preference for material and physical security, postmaterialism in the emphasis on higher needs like freedom, participation, self-expression, or beauty. The second version defines this dimension more broadly as survival/self-expression dimension and includes interpersonal trust, happiness, and a liberal sexual morality as further indicators. Moreover, a second dimension is added which contrasts so-called traditional and secular-rational societies. Both dimensions are imbedded in a theory of value change, which describes modernization as a two-phase process. While traditional are replaced by secular-rational values in the process of industrialization, the self-expression values become predominant during the transition from the industrial to the postindustrial or advanced societies.

Discussions on the dimensionality of materialism and postmaterialism, particularly Flanagan's (1987) distinction between an economic and an authoritarian-liberal dimension, may have had an impact on Inglehart's revisions (Inglehart, 1997; Inglehart and Baker, 2000), but altogether the new values rather look more like inductive generalizations from empirical findings rather than theoretically derived concepts.³

c) Similarities. Schwartz specifies ten values, Inglehart four or two – depending on whether the poles or the dimensions are counted as values: Nevertheless, there are similarities between the concepts. *Security* (lower right segment of Figure 1) corresponds to survival needs, and stimulation and self-direction in the upper segment correspond to self-expression quite well. The match between a traditional orientation (Inglehart) and tradition (Schwartz) is obvious. Achievement in the lower left segment could be interpreted as a secular-rational orientation because it was an essential outcome of the modernization process. The two value dimensions of Inglehart can be plausibly located in the value space of Schwartz though the orthogonality may not be preserved.

³ Inglehart and Welzel (2005) have further elaborated the theoretical model of value change, but left the measurement model unchanged.

2.2 The Measurement Models

a) Inglehart. The first version of Inglehart's theory only included two alternative measurement models for the Materialism/Postmaterialism (MPM)-Dimension. The larger model consists of twelve items⁴, the smaller one, the so-called 4-item MPM-index, is derived from naming the two top priorities among four political goals. As only two questions – each with four priorities – are required, the 4-item MPM-index is extremely parsimonious and presumably the most widely used value measurement in international surveys. The discussion of the index would fill a whole methodological textbook of insightful criticism and intriguing counterarguments. Even the most ardent critics cannot deny, however, that the index fits Kluckhohn's (1951) famous definition of a value remarkably well: It measures conceptions of the desirable [features of a society]⁵, and it is shown that these conceptions determine attitudes and behavior in various domains.

Table 2 about here

The 4-item MPM-index indeed includes a relatively small number of political preferences. The objection that it remains a measure of political preferences cannot be fully denied. The measurement instrument of the revised theory covers a much broader range of topics but it also has become very heterogeneous, including feelings, emotions, and reported behavior. The MPM-index along with questions on happiness, homosexuality, interpersonal trust, and on political petitions are used for measuring survival/self-expression values. Religiosity, condemnation of abortion, deference to authority, obedience, and identification with the nation characterize traditionalists and distinguish them from secular-rational persons. No doubts that there are other and probably better measures of the two value dimensions, but Inglehart being interested in long-term value change, has decided for the ten indicators in Table 2 (Inglehart and Baker, 2000) because they are available in all European Values and World Values Surveys since 1981. As a consequence, the secular-rational pole of the value continuum is not positively defined by indicators of a rational orientation but only negatively determined as the absence of traditional orientations.

In contrast to Rokeach (1973) or Schwartz (1992), Inglehart avoids the use of generic terms in the questions on values for the reason that specific items are better understood by the respondents and may be less affected by framing effects. On the other hand, items about

⁴ De Graaf *et al.* (1989) report reasonably high factor loadings of the 12 items, after correction for ipsative measurement has been performed.

⁵ Respondents have to choose whether higher priority should be given to freedom and participation or to the maintenance of order and economic stability

political preferences are theoretically only indirectly related to values. This is even truer for the other value indicators such as questions on self-reported behavior, interpersonal trust, authoritarianism, or national identity which often are used as indicators for other theoretical constructs like interpersonal trust, authoritarianism and national identity. The factor analytic models which Inglehart and others (cf. Inglehart and Baker, 2000; Inglehart and Welzel, 2005) apply presuppose a direct effect of the latent values on these indicators which clearly is inconsistent with the results of social psychology (see Eagly and Chaiken, 1993; Fishbein and Aizen, 2010). The effect of a value on behavior, for instance, is mediated among others by the evaluation of objects and behavioral intentions, etc. (Fishbein and Aizen, 2010). Furthermore, the reasoned action approach (Fishbein and Aizen, 2010) assumes causal relations among variables that Inglehart treats as indicators of the value variables, that is, the axiom of local independence is violated.⁶

All in all, the reader gains the impression that the indicators of postmodern values have been chosen in such a way as to maximize the relationships with external variables. Inglehart was much less concerned about a coherent expansion of the original individual-level value model as the new indicator *Happiness* shows. We know, from previous studies, that happiness does not correlate with postmaterialism: “Subjective well-being is a condition, not a value, and not correlated with Postmaterialism at the individual level” (Inglehart, 1997, p. 87). We infer that the MPM-index and the *Happiness* item should not be combined as multiple indicators in a measurement model for individual-level postmodern values because sufficiently large indicator correlations are a minimum requirement of high reliability. From the sentence that immediately follows: “But high levels of subjective well-being are a key element in the cultural syndrome called Postmodernism.” (Inglehart, 1997, p. 87), we might further conclude that Inglehart wants to use different indicators for the macro-level cultural syndromes and the individual level values – a decision which as such could not be criticized. Inglehart and Baker (2000), however, take exactly the same indicators for measuring macro- and micro-level values. Two consequences can already be anticipated before any empirical analysis is carried out: The use of both indicators will deteriorate the reliability and internal validity of the measurement model and, at the same time, increase the correlation of the survival/self-expression index with well-being. The latter result has a tautological flavor because it is near-at-hand that an index including happiness as a component will predict well-being quite well. We will return to that problem in a later Section.

⁶ The MPM Index as a general political attitude has an indirect causal (mediated via intention) effect on “signing a petition” (behavior).

b) Schwartz. To avoid indirect indicators, Schwartz strictly distinguishes between the measurement of values and the measurement of attitudes (Schwartz, 2007). He tries to tackle the confounding of values and attitudes by proposing an instrument of broad and basic motivations relevant to various attitudes and behaviors in different domains in life (Schwartz, 2007). This strategy, however, also has its price. Expressions like: “everybody in the world be treated equally”, for instance, can be interpreted in the sense of equal starting conditions or in a strict egalitarian sense which would include equal pay for all human beings, etc. People may agree with the first idea but not with the second. Depending on how the question is framed we have to expect different answers.⁷ These framing effects may not only produce random measurement error but also result in halo effects and other kinds of systematic distortions. Unfortunately, there has been so far no systematic comparison of Inglehart’s and Schwartz’ measurement instruments using cognitive interviews (Willis, 2005), which would give us better insight into the measurement quality of these items. The indicators of Schwartz are listed in Table 3.

Table 3 about here

2.3 The Hypotheses

While Schwartz at least implicitly emphasizes value stability, Inglehart presents a dynamic theory of value change, though he shares the assumption that individual-level values are by and large stable in adulthood. Inglehart was, from the early seventies on, intrigued by the observation that the values of younger generations markedly differed from the values of the parent generations in the West. It was not a small shift from giving a higher priority to a given value to giving a higher priority instead to a neighboring value in the Schwartz circle, say from conformity to security, but rather a shift from one side to the opposite side in Figure 1: While the parents still strive more for security and material goods compared to younger generations, the younger generations emphasize self-actualization and the abolishment of old hierarchical structures more strongly than their parents. The seminal book *‘The Silent Revolution’* from 1977 tries to explain the value differences between post-war older generations and younger generations as a change from materialistic to postmaterialistic values. Inspired by Maslow’s need hierarchy and the principle of relative potency, Inglehart systematically elaborated the idea that economic, social, and political security has a tremendous impact on human life. People who grew up and lived in a secure environment

⁷ It is likely that a respondent will be more positive toward this question if previous questions referred to discrimination of minorities and more negative if previous questions referred to equal pay for industrious and idle workers.

differ in political attitudes and behavior, gender and family orientations, work preferences, religious orientations, environmental concern, interpersonal trust, and many other issues from those who have to fight for their subsistence and are threatened by turmoil, wars, and disorder.

Along these lines he has developed a rich set of highly differentiated hypotheses – most of which appear already in the first version of his theory. It has already been shown by example of *Happiness*, however, that the relationship between postmaterialist and postmodern values is not always clear. It is sometimes doubtful whether and how the hypotheses of the former theory can be translated into hypotheses for the new values. As long as there is no convincing argument to the contrary, however, we infer, from the fact that the MPM-index is seen as a key indicator of the new survival/self-expression dimension, that postmodern individualists feel, think, and behave like postmaterialists. The relationships between the traditional/secular-rational value dimension and external variables are even less developed. When not otherwise stated, we tentatively infer the respective hypotheses from the basic ideas of the theory.

As far as the hypotheses of Schwartz are concerned, we strictly will confine ourselves to those hypotheses which have been explicitly stated in the literature. Sometimes opposite effects are stated for opposite values in Figure 1 - but can we generally assume that opposite values display opposite relationships with external variables? Is a positive effect of age on conservation, for example, necessarily paralleled by a negative effect of age on openness to change, and a positive influence of benevolence on immigration by a negative effect of self-enhancement on the same attitude? If the value space were truly two-dimensional, this would be the case. Two (not perfectly correlated) values would be sufficient, however, for extracting the two orthogonal dimensions. All other values could be calculated as a linear combination of these two dimensions or of the two values. Accordingly, “opposite values” would be linearly dependent, and their effects could not be estimated. Actually the values of Schwartz are located in a space of higher order. The projection into the two-dimensional space represents the relationships among the values approximately but is far from perfect. As a consequence, we cannot always predict from the relationship of a first value with an external variable the sign of the effect of the opposite value (see Costner and Leik, 1964). This introduces additional complexities into theory construction and testing as will be seen later on.

Below we present a brief summary of those hypotheses that can be tested with the ESS 2004 and the WVS 2005 data. This is a fairly severe restriction because both surveys do not include many comparable external variables. Most of the items refer to the socio-political domain which may slightly bias the results in favor of the postmodernization theory which often is called a political theory. As long as Schwartz does not systematically specify the influence of values on attitude and behavior, however, the size of the bias remains unknown.

There is a further qualification: Frequently, the surveys include a general variable such as the left-right self-placement scale, but an appropriate test of a theory would require a finer distinction, for instance, a differentiation between the economic and the libertarian/authoritarian meaning of left and right. If this is not possible, we can only estimate the presumably weaker effect on the general left-right scale and in this regard probably underestimate the predictive power.

Bearing these qualifications in mind, we first discuss the relationships of values with the exogenous variables age, gender, and education, and then move to factors, which are dependent on values.

2.3.1 The Impact of Social-Structural Variables on Values

Age and Generation. To Inglehart, generational differences are a function of economic and technological change. Younger generations differ from older insofar as they grow up in a different environment. Inglehart has never completely excluded life-cycle effects (see, e.g., Inglehart, 1981, 1990, 1997; Inglehart and Welzel, 2005), but he interprets age differences in the first place as a sign of generational change. Large economic changes, as they occurred in the West after World War II, also imply the already mentioned large differences between the older materialistic and the younger postmaterialistic generations. The trend could also reverse if the advanced society would experience a long-lasting period of economic decline.

In the later theory of postmodernization, value change occurs on two dimensions: Those who grow up in very poor, traditional societies internalize traditional and survival values; those who grow up in affluent, postindustrial societies, place an emphasis on rational-secular and self-actualization values in adulthood. In the transition from a traditional to an industrial society, generational differences along the traditional/secular-rational axis should be most pronounced while in the transition from the latter to the postindustrial society, differences on the survival/self-expression dimension should be greater.

It is not necessary to elaborate entirely the model of generational change because we investigate values in a single society at a single point in time. It is sufficient to state the

implication of the model for the effect of age on the values: As Germany has experienced a fast economic development after World War II, younger people should be more rational-secular than older people, and they should also place more emphasis on self-actualization values. Age effects cannot be separated from generation effects in a cross-sectional analysis. If the latter should be superimposed by life-cycle effects (Jagodzinski, 1983) the relationship would only be strengthened. Accordingly, we expect a negative effect of age on both value dimensions.

Schwartz (2006, 2007) also refers to both cohort effects due to differential socialization contexts and individual life-cycle effects. In the derivation of concrete hypotheses for age, Schwartz follows the logic of life-cycle effects. Older people become more committed to their habits and develop stronger ties to their social networks, resulting in fewer changes and challenges, less openness for such changes, and stronger reliance on conservative values (Glen, 1974). Therefore, older people are expected to score higher on conservation values (tradition, conformity, security) and lower on openness to change values (self-direction, stimulation) (Schwartz, 2006, 2007; Meuleman et al., in press). Furthermore, as individuals become with age less preoccupied with themselves and more with others, self-transcendence is expected to increase and self-enhancement to decrease (Schwartz, 2006; Veroff et al., 1984).

Education. If education enhances exposure to new experiences, different people, and alternative ways of reasoning, more educated individuals should score higher on self-enhancement, openness to change, and self-transcendence values, and lower on conservation values (Meuleman et al., in press; Schwartz, 2006). According to Inglehart, respondent's education to some extent reflects the indoctrination of values in school, but to a larger extent the economic and social conditions during the formative years: Children of highly educated families usually grow up in a secure environment⁸. Thus, the higher the education, the more likely secular-rational and self-expression values have been internalized (Inglehart, 1990): Education, in other words has a negative effect on traditional and survival values.

Gender. Inglehart explicitly states no value differences between men and women. Schwartz, by contrast, follows theories of gender differences in assuming that men attribute higher importance to instrumental values such as power or achievement, as well as stimulation, hedonism, or self-direction values, and lower importance to benevolence and universalism

⁸ Education of the parents would better reflect the economic conditions in childhood and youth. The explanatory power is slightly underestimated if respondent's education is used as a predictor.

values (Schwartz, 2006, 2007; Schwartz and Rubel, 2005; Schwartz and Rubel-Lifschitz, 2009; Meuleman et al., in press).

2.3.2 The Impact of Values

Left-Right Self-Placement. Postmaterialists as early as in the seventies placed themselves on the left of the left-right continuum, because they aimed at political change, opposed the old, middle to right-wing political elites, and held leftist political and social attitudes. Inglehart emphasized very early that the meaning of left and right undergoes a change in advanced societies, from the economic left-right distinction to a new conflict, which centers around self-expression values, and becomes manifest in issues of environmental protection, gender roles, or political participation. The meaning of the left-right dimension is also dependent on the locations of parties in a given country. Thus, if the political parties hold positions along the economic left-right dimension, this understanding of left and right will also dominate in the public. For the West German public the notions *left* and *right* have a mixture of meanings. They are still associated with the economic cleavage where a leftist position is egalitarian. Emphasis on gender equality, environmental protection, and liberal moral attitudes are also seen as left positions. Right by contrast, is not only associated with conservatism, law and order, and hierarchy but also with church and religiosity. Accordingly, traditional as well as survival values should be positively correlated with a right position on the scale.

In the framework of Shalom Schwartz, individuals scoring high on universalism and benevolence values (self-transcendent dimension); who are open to change, or who focus on the welfare of the others are expected to be more strongly related to the political left, whereas individuals scoring high on conservation and self-enhancement values are expected to be more strongly related to the political right. These expectations correspond to the meaning of left and right in contemporary liberal democracies (Purkayastha et al., forthcoming; see also Schwartz, 2006; Caprara et al., 2006).

Political Interest. With regard to political interest and political activism the situation is slightly more complicated. In many Western countries, party identification and voter turnout rates have declined during the last decades so that it seems obvious to expect a decline of political interest, too. Inglehart, however, has argued that postmaterialists are more interested in politics (Inglehart, 1997, p. 308). Self-actualization indeed requires political engagement in democratic societies so that political interest can be expected to increase with self-expression values. Whether the same holds for secular-rational values is doubtful. During the postwar era, churches in Western Europe supported social and political integration. A good Christian

had to vote in elections and be interested in politics as well. Accordingly, the relationship between secular-rational values and political interest may be much weaker or even be reversed.

Because of the similarity between postmaterialism and universalism and maybe benevolence values as well, one could also infer that individuals who place high importance on self-transcendence values may be more interested and involved in politics. Indeed, politics often involves issues that are of key concern for universalistic ideologies such as immigration policies, social welfare, or environment. Security, conformity, and self-direction values have also turned out to be of central importance in the formation of political values of voters in various contexts (see, e.g., Barnea, 2003; Schwartz, 2006; Caprara et al., 2006).

Political Activism. More than thirty years ago Inglehart predicted a decline of elite-directed and an increase of elite-challenging political behavior (Inglehart, 1977, pp. 317-321). The former comprises voting and traditional forms of party support, in particular party identification; the latter the participation in boycotts and protest demonstrations or so-called unconventional protest behavior. The prediction was based on two central variables, cognitive mobilization and postmaterialism. The former would increase as a consequence of rising formal education and the improvement of political skills, the latter as a consequence of rising economic prosperity. Elite-challenging political behavior should still be positively affected by education⁹ and self-expression values or, vice versa, negatively affected by survival values. As elite-challenging political activism remains the least wide-spread among traditional people, traditional values should also have a negative effect.

One may expect universalism and benevolence values, which promote social justice and environmental care--important topics in politics--- to predict stronger political activism (Schwartz, 2006). Since political activism may be risky and involve excitement and formation of independent and maybe deviating opinions, security and conformity are expected to display the most negative association with political activism (Schwartz, 2006, 2007).

Attitudes toward Immigrants. Inglehart (1977, p. 320) discusses early on the link between a cosmopolitan orientation, cognitive mobilization, and postmaterialism, whose basic mechanism is elaborated more clearly in later publications. Feelings of insecurity are the main source of parochialism and xenophobia (Inglehart, 1997). Existential threats foster ingroup/outgroup thinking. People seek safety in closely knit networks. Accordingly, traditional as well as survival values are negatively related to openness toward immigrants.

⁹ An index of cognitive mobilization would certainly be a better predictor than education.

As far as the Schwartz values are concerned several studies (Schwartz, 2006, 2007; Davidov et al., 2008b; Davidov and Meuleman, 2012) link universalism and benevolence values to a positive, and conservation and conformity to a negative attitude toward immigrants. The latter, negative relation can be expected because conservatives tend to perceive immigrants as a threat to the preservation of norms, customs, and established religions, or, in short, the stability of a society. By contrast, the motivational goals of self-transcendence values (especially universalism), such as understanding, appreciation, tolerance, and protection for the welfare of people and for nature, are promoted by the arrival of immigrants (e.g., Sagiv and Schwartz, 1995)

Life Satisfaction. We have already mentioned the fact that life satisfaction may correlate with the self-actualization index for the simple reason that *Happiness* is a component of the index. However, there is also a theoretical reason for expecting a positive relation between self-expression values and happiness or life satisfaction. Individualists have more influence on the definition of their political, social, and private goals and are less directed by others. They, therefore, also have better chances of realizing their goals, can attribute the success to themselves, and be more proud of their actions. As a consequence, they reach a higher level of satisfaction (see Jagodzinski, 2010a for a more comprehensive analysis). By way of contrast, survival values should negatively affect life satisfaction.

In the value system of Schwartz one may consider different views on how values may affect life satisfaction. One view suggests that successfully realizing any of one's values may increase one's well-being. According to this view, when people believe that some values or goals they see as important are blocked, their life satisfaction suffers (Schwartz and Melech, 2000). Other authors suggest that only certain values may have an impact on well-being. Jensen and Bergin (1988) and Strupp (1980) identified 'healthy' values (self-direction, benevolence, universalism, but also achievement and stimulation) and 'unhealthy' ones (conformity, tradition, security, power) (see Sagiv and Schwartz, 2000). They argue that *realizing* 'healthy' values should enhance happiness. Yet the questionnaire does not measure the realization of values but only their importance and one cannot infer from the importance of values that they are realized. Bilsky and Schwartz (1994) hypothesized that values representing growth (self-direction, universalism, benevolence, achievement, and stimulation) are emphasized by individuals who successfully realize these values in their lives and display higher levels of well-being. In contrast, when these values cannot be realized, individuals tend to suffer from lower levels of well-being and increasingly emphasize conformity, security and power values (but also tradition) compensating for deprivation (Bilsky and Schwartz, 1994;

Sagiv and Schwartz, 2000; see also Schwartz et al., 2000). Although hedonism points toward personal pleasure as a goal, Sagiv and Schwartz (2000, p. 182) maintain that one cannot derive a theoretical relation of the importance of hedonistic values and life satisfaction. Empirically, they do not find a significant correlation between hedonistic value orientation and subjective well-being.

Church Attendance. Traditional people do not only hold strong beliefs, but they also participate regularly in religious services. Therefore, a positive correlation between religiosity and traditional values can be expected. The same holds for survival values because religion also gives security and orientation in an insecure environment. Applying the same logic to the values of Schwartz, one can expect a positive impact of traditional individuals on the frequency of religious participation. Hedonists, by contrast, should attend religious services less frequently (Schwartz and Huismans, 1995) because, after all, religion signifies preferring transcendental concerns over materialistic ones. Benevolence and conformity also include some degree of selflessness and are expected to be positively related to religiosity. Since religion is also related to preserving the status quo and increasing certainty in life, one may expect religiosity to be positively linked with tradition, conformity, and security values, and negatively with stimulation and self-direction values, that reflect openness to change (Schwartz and Huismans, 1995).

Attitudes toward Gender Equality. One of the core elements of self-expression values is the emancipation from authority. Human beings are free and equal. Self-expression values are, therefore, positively and survival values negatively correlated with gender equality. Traditional values should have a similar negative effect because the differential treatment of men and women is firmly anchored in the ideology and religion of traditional societies. Following a similar logic, a preference for conservation values in the Schwartz theory is expected to predict a rejection of gender equality. A universalistic orientation toward humankind and a benevolent orientation to the concrete others (theoretically, men and women) promote a positive stance on gender equality. As self-enhancement and stimulation emphasize individual freedom and openness to new experiences, they should lead to a preference for gender equality as well. Table 4 summarizes the hypotheses.

Table 4 about here

Next we turn to the empirical part. In this section we will describe the datasets used and the measurement characteristics of both value theories (internal validity) and present the relations of values in both theories with external variables (external validity and parsimony).

3. Empirical Analyses

3.1 General Problems and Limitations

Before the analysis can be carried out, two important decisions have to be made. The first is favorable to Inglehart. Jagodzinski has carried out the same factor analysis as Inglehart and Baker (2000) with the data of the WVS 2005 and has shown that only the West German factor pattern was in line with the former results (see below, section 3.2 a). Therefore, we confine our analysis to West Germany (N = 1,851 in the ESS, N = 988 in the WVS).¹⁰

The second decision is in favor of Schwartz. Faced with the question of whether to carry out the analysis exclusively with the WVS or to test the theory of Shalom Schwartz with the ESS, we have opted for the latter alternative for several reasons. Firstly, 21 indicators (ESS) are usually better than ten (WVS), because there are at least two indicators available to measure each of the ten values (see Bollen, 1989). Had we presented the results for the ten-indicator models of the WVS, it is highly likely that objections would have been raised that these few indicators do not cover the values of Schwartz adequately. Secondly, 21 indicators measure the underlying values more reliably than ten if the indicator correlations are sufficiently high. We will show later on that this rule even applies if five generalized values instead of the ten basic Schwartz values are specified. Thirdly, we will almost certainly estimate larger effects and higher predictive power of the Schwartz values by using the ESS because some of the dependent orientations are estimated more reliably.¹¹ It finally has to be mentioned that Inglehart's value dimensions have to be operationalized as simple additive indices. This method does not eliminate the random measurement error completely and tends to underestimate the strength of the relationships among latent variables (Bollen, 1989). The measurement of the Schwartz values is also not optimal but the number of items in the ESS is at least sufficiently large to measure each of the five generalized Schwartz values by at least two indicators. As a consequence, a correction of measurement error can be performed with SEM (structural equation model) programs like AMOS which usually results in stronger relationships among the latent variables compared with an analysis which only makes use of

¹⁰ The response rate of the German ESS 2004 was 52.6% (ESS2 – 2004, Data Documentation Report, Edition 3.3). The response rate of the German WVS 2005 was 46.3% (own calculation, based on "Technical Information" available on the WVS website, formula RR1, AAPOR guidelines, see <http://www.aapor.org>). For detailed information on the survey programs and data access, see www.worldvaluessurvey.org and www.europeansocialsurvey.org.

¹¹ It is one of the strategic goals of the ESS to develop reliable and valid measurement instruments for a set of relatively homogenous European countries. To the extent that this program is successful, the variables in the ESS will have lower random measurement error than variables in a worldwide survey and, as a consequence, yield higher standardized effects and higher R-squares (see Bollen, 1989 for the general argument). Accordingly, lower measurement error in the dependent variables may positively affect the predictive power estimates for the Schwartz values.

summative indices.¹² It has to be added that Inglehart as well as Schwartz and many of their colleagues are working on the improvements of the measurement models for the values.¹³ Both theories are still under construction (see below). The future measurement instruments will certainly overcome some limitations of the existing approaches.

3.2 Internal Validity

(a) Inglehart

The use of factor scores or summative indices is quite widespread in comparative research. In the former case, factor loadings serve as typical criteria of reliability, in the latter case, Cronbach's alpha. Inglehart and Baker (2000) report factor loadings and calculate factor scores. A reliable measurement instrument of stable values should also produce a more or less stable factor pattern over time. Jagodzinski (2010b) has, therefore, tried to replicate the factor pattern of the micro-level analysis of Inglehart and Baker (2000) with the WVS 2005 data. In his reanalysis, he used a very soft criterion of similarity or reproducibility: The factor pattern is successfully replicated if (1) the indicators display the same pattern of main loadings as in Inglehart and Baker (2000, p. 24), (2) the main loadings are above .4, and (3) always higher in magnitude than the cross (side) loadings.¹⁴ For that purpose, principal component analyses (PCA) were carried out in all countries and in the pooled data set. Missing data were deleted pairwise, and the number of factors was fixed at two. The solution was subjected to a varimax rotation. Contrary to the expectations, the factor pattern of Inglehart and Baker did not emerge in the pooled dataset or in any country (see Jagodzinski, 2010b for some of the results). In a separate analysis of the German data the resulting model for West Germany met the three criteria (see the left part of Table 5) while the models for East Germany (middle part of Table 5) and all-Germany (right part of Table 5) did not. The factors for West Germany are estimated in such a way that high positive scores indicate a preference for tradition and for survival. For indicating the direction of the value dimension we simplify the notation: instead of *Traditional/Secular-Rational values* we speak of *Traditional Values*, and instead of *Survival/ Self-Expression values* of *Survival Values*.

¹² Suppose that the indicators x and y of two latent variables display a correlation of .4 and that 50 percent of the variance in x and y is random measurement error. In this case we will estimate a correlation of .8 among the latent variables.

¹³ Welzel (2010), for instance, tries to solve some of the measurement problems by using formative indicators and modified values. A discussion of these models is beyond the scope of the present article but see Diamantopoulos et al. (2008) for a critical discussion of the potentials and the limitations of formative measurements. In particular, correction for measurement error is not as straightforward in formative measurement models as in reflective ones.

Current methodological studies on the Schwartz values propose a refined measurement with more indicators and/or more latent variables (Knoppen and Saris, 2009b; Beierlein et al., 2012).

¹⁴ More rigorous criteria, which are becoming state of the art, were formulated by Meredith (1993).

Table 5 about here

Although the principal component analysis for West Germany distinguished the two theoretical dimensions, this result departs from a simple structure. In particular, the cross-loadings of the items on abortion and on homosexuality are substantial.¹⁵ The former was conceptualized by Inglehart and Baker (2000) as a measure of the traditional/secular-rational value orientation, the latter as a measure of the survival/self-expression value orientation. However, both indicators are highly correlated among each other, and that is one of the obstacles to the specification of a parsimonious confirmatory factor analysis (CFA) model. We tried out a larger number of specifications but never arrived at a satisfactory result.¹⁶

Inglehart investigated measurement problems of materialism and postmaterialism in the 1970s and 1980s (see De Graaf et al., 1989; Inglehart, 1985). It is understandable, though regrettable, that the development of postmodernization theory was not paralleled by a similar elaboration of suitable measurement instruments for his new value concepts. We follow Inglehart in the subsequent analysis and work with similar additive indices and factor scores.

(b) Schwartz

Schwartz and several other researchers have invested a considerable amount of work in the elaboration of the underlying measurement model. It is now widely agreed, however, that even the 21 Portrait Values Questionnaire (PVQ) items in the ESS are not sufficient to measure all ten values adequately. Whereas studies using the full 40-item version of the PVQ (Steinmetz et al., 2009; Schmidt et al., 2007; Beckers et al., 2012) could identify all ten theoretical values in the empirical analysis, studies with the shortened ESS version of the PVQ report high correlations between items intended to measure adjacent but different values. Knoppen and Saris (2009a) have questioned the face validity of the indicators of universalism, tradition, and power and have proposed as a possible strategy to work for the time being with those seven values which are reliably measured. In addition, Schwartz et al. (in press) have enlarged the model to 19 values in a new cross-national study. Other authors have collapsed adjacent values (Bezonsky et al., 2011, Davidov et al., 2008 b, Duriez et al., 2005, Verkusalo et al., 2009). Davidov et al. (2008a) and Davidov (2008, 2010), for instance, identify maximally seven distinct value constructs across most of the ESS countries by using

¹⁵ From a methodological point of view, principal axis factoring (PAF) is more suitable to discover latent dimensions that are measured by observed indicators because PAF, in contrast to PCA, includes the assumption of measurement error. We employ PCA to replicate the original study of Inglehart and Baker (2000).

¹⁶ Results of the CFA models for the Inglehart items can be obtained from the authors upon request.

all ESS items in a multiple group confirmatory factor analysis (MGCFA). They model the indicators of three pairs of adjacent values as measuring three new latent variables: the indicators of benevolence (BE) and universalism (UN) are now specified as indicators of a new latent variable UNBE, those of achievement (AC) and power (PO) as indicators of POAC, and those of tradition (TR) and conformity (CO) as indicators of TRCO. With some modifications (see Davidov et al., 2008a, pp. 434f.), this model achieves satisfactory fit and can be accepted in terms of internal validity. From a broader perspective, these different approaches focus on the same values because they use the original indicators of Schwartz and specify the measurement models in such a way that the resulting latent variables remain in close vicinity semantically to the corresponding values of Schwartz. The SEM methodology is much stricter, however. It is not sufficient to use the same indicators and value names in different studies. Rather, metric equivalence requires that also the unstandardized factor loadings do not differ (Meredith, 1993); for the minimum condition of partial metric invariance at least two unstandardized factor loadings per construct have to be equal (Byrne and Van de Vijver, 2010). Different studies typically impose different constraints on the measurement model, estimate different unstandardized factor loadings, and therefore also generate different values. This is also true of our study. It was not our intention to create a new set of values but we could not reproduce the values of former studies.

It is a property of the circumplex structure that indicators of adjacent values sometimes correlate as high with each other as with the other indicator(s) of the same value, and the correlation between adjacent values, therefore, is also very high. In the model with seven values, self-direction and stimulation as well security and conformity/tradition correlate above .80. Using all seven value constructs in a multiple regression results in extraordinary large standard errors which indicate problems of multicollinearity.¹⁷

To ensure that the value constructs can be used in regression models and to preserve the desirable proportions of CFA models with correction for measurement error instead of using additive indices, we have to collapse further indicators to therefore create new and broader concepts. This strategy is not solely data-driven but distinguishes those four values which Schwartz conceptualizes on a higher level: "Openness to change" (OPEN) – measured in our analysis by indicators of self-direction and stimulation, "self-transcendence" (SELF-TRANS) – measured by indicators of universalism and benevolence, "conservation" (CONSERV) –

¹⁷ This is one of the reasons why structural equation modeling (SEM) with the 7 values as predictors of external variables more often than not produces non-admissible solutions (generally for this problem of multicollinearity in SEM see Marsh et al., 2004).

measured by the indicators of conformity, tradition, and security, and finally “self-enhancement” (SELF-ENH) – measured by the indicators of power and achievement. While Schwartz introduces these values as second-order concepts, we specify them as new first-order latent variables. From the original values only hedonism (HE) remains and is situated between openness to change and self-enhancement.

Table 6 about here

As the number of values has been reduced in any case, the question may arise of whether the ten indicators of the WVS are not sufficient for a suitable measurement model. This had the obvious advantage that one and the same data set could be used and independent and dependent variables in our tests would be exactly the same. The two measurement models presented in Table 6 allow us to answer the question. The standardized loadings of the ten WVS indicators are always displayed in the first column below the respective values, the loadings of the 21 ESS indicators in the second. Cross loadings which are not consistent with the theoretical expectations are shaded gray. A brief comparison tells us that the ESS model fits the theoretical expectations much better than the WVS model. While the ten WVS indicators display five theoretically unexpected cross loadings, the 21 ESS indicators display only four. The WVS indicator “Important to be rich” displays a very high negative loading on SELF-TRANS though one can hardly say that there is a direct impact of self-transition on the desire to be rich. Finally, tradition (Imptrad), which should be a key indicator of CONSERV in the WVS, actually has a higher loading on SELF-TRANS (.379 vs. .278).¹⁸

These results argue strongly in favor of the ESS solution. The correlations among the latent variables for this model are displayed in Table 7. To achieve an acceptable fit ($\chi^2 = 961.4$ with $df = 175$, RMSEA = 0.050, CFI = .912), four cross-loadings have to be allowed. All cross-loadings are substantially smaller than the respective target loadings. Three of them are negative in sign. In these instances, the indicator is in a sense more distant from the side factor than the other indicators of the main factor. The only positive cross-loading that had to be allowed relates an indicator designed to measure self-enhancement (in fact, the

¹⁸ Cronbach’s α supports the choice of ESS, too. If the standardized indicators with loadings $>.4$ in magnitude are summed up to an index of the respective values, the ESS value index always surpasses the WVS value index in terms of reliability. The alphas are .636 (WVS) vs. .670 (ESS) for SELF-TRANS, .418 (WVS) vs. .596 (ESS) for OPENESS, .533 (WVS) vs. .674 (ESS) for SELF-ENH, and .485 (WVS) vs. .694 (ESS) for SELF-TRANS. While $\alpha = .710$ for hedonism in ESS, no alpha can be calculated in the single WVS indicator. It is true, the reported figures are in general not very impressive. Yet while the estimates for the ESS scores in most of the cases come close to .7, which is often seen as the lower bound for a suitable scale, the α reliabilities of the WVS indices always remain below that margin. We do not want to discuss the pros and cons of Cronbach’s α here because we will not use sum scores for measuring the values of Schwartz. We take the results as a further indication, however, that also the latent variables in SEM models would suffer from reliability problems if the ten items of the WVS were used for measuring even only five latent values.

subdimension of power) to the theoretically adjacent dimension of conservation. Apart from these deviations, however, the five latent variables are measured fairly well.

Table 7 about here

Notice that the average size of the correlations between the five values is much lower than those found between the seven value constructs identified by Davidov et al (2008a). Therefore, this conceptualization is more suitable for multiple regression models in which different values are simultaneously used as predictors. So we arrive at a viable, but certainly suboptimal, solution.

3.3 External Validity

The external validity of both value theories is assessed with regard to their relation to a selection of external variables. The selection was guided by two criteria: (1) Theoretical relevance for both value theories (see section 2.3). (2) (Almost) equal or similar measurements in the WVS and ESS (for item wordings and response scales see Appendix, Table A1, and Table A2).

(a) Inglehart:

Table 8 about here

Table 8 reports the effects of sociodemographic variables on survival and traditional values in the upper part and the effect of these values on external variables when controlling for demographic variables in the lower part. As hypothesized, traditional values and survival values are related positively to age and negatively to education. In general, using values as predictors of attitudes and behavior confirms the theoretically expected relationships (see section 2.3). The only exception is the prediction of openness to immigration. A negative effect of both traditional and survival values seemed plausible, but only the effect of survival values is significant.

Although the effects of the Inglehart values are substantial on all external variables, there are noticeable differences in the predictive power of the different external variables. Survival values and traditional values can explain more than 20% of the variance in church attendance and life satisfaction and around 15% of the variance of political activism over and beyond sociodemographic variables. At the same time, the effect size is much lower on political interest, self placement on the left-right scale, and attitudes toward gender equality with around 5% of additional explained variance for each. For openness to immigration, the effect size is in the medium range with an 8% change in R^2 . Using factor scores (compared to

simple sum scores) does not consistently result in higher explained variance. The R^2 for life satisfaction differs most. The model with unweighted sum scores explains only 18% of the variance and the model with factor scores, in contrast, explains more than 25%.

(b) Schwartz:

Taking advantage of the measurement model presented above, all analyses for the Schwartz values were conducted in a multivariate model in an SEM framework with latent variables.¹⁹

Table 9 about here

Table 9 reports the effects of sociodemographic variables on Schwartz values in the upper part and the effect of these values on external variables when controlling for sociodemographic variables in the lower part. The effects of sociodemographic variables on self-transcendence and openness to change are in line with the theoretical expectations (see section 2.3): Age has a positive effect on self-transcendence and a negative effect on openness to change, education leads to the enhancement of both, and women, on average, score higher on self-transcendence than men. For hedonism, no effects of sociodemographic background variables were expected, but the analysis revealed a negative effect of age and gender on hedonism (with men scoring higher on hedonism). Self-enhancement, in line with the theoretical expectation, is higher for men, increasing with education and declining with age. The hypotheses for conservation are confirmed as well: Age has a positive effect, education a negative one. In addition, women tend to be slightly more conservative than men.

Evaluating the estimated relations of Schwartz values with external variables in light of the theoretical hypotheses we developed gives a mixed picture. As expected, self-transcendence values lead to a more leftist political orientation, and conservation values lead to a more rightist view. The hypothesis that self-enhancement values are a precursor of rightist orientation is clearly rejected for the West German sample, in fact the data point to the opposite. In addition, an unexpected positive effect of openness to change values on rightist views was found. The results for the prediction of “political interest” only partially match the theoretical expectations: Whereas the positive effect of self-transcendence is confirmed, the hypothesized positive effect of self-enhancement is not found and an unexpected negative effect of conservation values on political interest is revealed in the multivariate analyses. With respect to political activism, the expected positive effect of self-transcendence values and the expected negative effect of conservation values are supported by the data. For openness

¹⁹ Computations were carried using maximum likelihood estimation in AMOS 18. Detailed information on the model specification can be obtained from the authors upon request.

toward immigration, the observed negative effect of conservation values and the positive effect of self-transcendence values correspond to the theoretical expectations, whereas the analyses revealed an additional negative effect of openness to change values. In the prediction of life satisfaction, only the positive effect of self-transcendence values is confirmed by our analysis. The expected negative effect of conservation values is no longer significant in the multivariate model, and openness to change values show a negative effect where we expected a positive effect. Contrary to the reasoning and the results of previous studies (Bilsky and Schwartz, 1994), we do find a relatively strong positive effect of hedonistic value orientation on life satisfaction. The hypotheses on church attendance only find partial support as well: Respondents high on conservation values go to church more often. But contrary to the theoretical expectation, the effect of openness to change values on church attendance is positive and the effect of self-transcendence is negative. In addition, we observe negative effects of self-enhancement and hedonism values. With respect to attitudes toward gender equality, the expected negative effect of conservation values and the positive effect of self-transcendence values are supported by the data. However, contrary to the hypotheses, the effect of openness to change values is negative in a multivariate model.

Some of these findings seem to unsettle widely-held premises. That openness to change is associated with a right position, for instance, contradicts a persistent finding in Western democracies. It is also a near-at-hand conclusion from the value circle because openness to change is located opposite of conservation. Our results call all these considerations and findings into question because openness to change has a relatively strong positive impact ($=.356$) on the left-right scale. One might try to theoretically explain this result by differentiating between politics and other domains. Openness to change in the private world, it might be argued, must not to be mixed up with a preference for political change. Politically conservative people can be self-directed and open to change in the private world. To them a stable political system is a precondition for being open. The explanation, however, ultimately undermines the idea that values are overarching and not domain-specific orientations. Before we follow this line of reasoning, however, we better look for alternative, in particular also statistical reasons which may have produced the result. We have already pointed out in section 2.3 that opposite values need not have opposite effects if the value space actually has more than two dimensions. This, however, is the case as the correlations in Table 7 show. Nowhere do we detect correlations of -1 for opposite values. The values are also not evenly distributed in the two-dimensional space. Three of them – self-enhancement, hedonism, and openness – cluster closely together with inter-correlations above .5 while conservation is

located farther away from this cluster.²⁰ As a consequence, the effects of all five values on the dependent variables are identified. Some of the correlations in Table 7 are fairly high but not high enough to cause multicollinearity problems.

We are confronted with another type of problem which is known from the discussion of suppressor effects: The sign of the effect of X on Y may change when a third variable Z is additionally included in the analysis. Openness to change displays the theoretically expected negative correlation with the left-right scale – not very strong but significant ($r = -.10$). In the multivariate analysis this negative correlation is decomposed into a direct effect and a larger number of indirect relationships. Let us focus for the moment on only one additional variable, namely, self-transcendence, and let us further assume that the impact of $-.468$ on the left-right scale in Table 7 were a correlation. The correlation between the two values is $.442$ ²¹ and the indirect relationship between openness to change and the left-right scale via self-transcendence were $-.468 \times .442 \approx -.20$. The effect of openness to change on the left-right scale were about $+0.13 (\approx (-.10 + .20) / (1 - .442^2))$.²² The indirect effect via self-transcendence would have transformed the negative correlation into a positive effect. Actually, the correlation between self-transcendence and left-right-self-placement is lower ($= -.130$) but in principle the same logic applies: Not just one but several indirect relations of openness to change with the left-right self-placement contribute to a negative relationship – for example, the paths via self-enhancement and conservation, leaving the additional paths via the demographic variables aside.²³ As the sum of all indirect relationships is much below $-.10$, they have to be counterbalanced, so to speak, by a fairly strong positive effect of openness to change on the dependent variable in order to reproduce a weak negative correlation. The inclusion of other values destroys a theoretically plausible relationship in that it turns a theoretically expected negative correlation into a theoretically unexpected positive effect. The precise conditions can be easily stated for models with only two independent variables, while they are somewhat more complicated for larger models. Relatively small changes in the correlation coefficients,

²⁰ Furthermore, self-enhancement and openness, for example, should correlate more strongly with their immediate neighbor, hedonism, than with each other. Actually, self-enhancement correlates higher with openness ($r = .620$) than with hedonism ($r = .531$).

²¹ It is in the model with all exogenous variables marginally higher than in Table 7 (0.426). Self-enhancement also displays slightly different correlations with self-transcendence ($.083$ instead of $.061$) and with conservation ($.069$ instead of $.080$). All other correlations differ only at the third digit.

OPEN mit SELF-TRANS: $.426 / .442$

²² In the three-variable case, the standardized regression coefficient is: $\beta_{LO} = (r_{OL} - r_{LT} \cdot r_{OT}) / (1 - r_{OT}^2)$ where r_{OL} and r_{TL} are the correlations of the left-right self-placement scale (L) with openness to change (O) and self-transcendence (T), respectively, and r_{OT} is the correlation between the latter two values.

²³ Openness to change displays a positive correlation with the first two values and a negative with the third (see Table 7). Self-transcendence and self-enhancement have a negative effect on the left-right scale and conservation has a positive effect (see Table 9).

in any case, can result in fairly large changes of the regression effects. And these small changes already can occur if indicators are confounded. Two of the indicators of self-transcendence, for instance, are relatively close to leftist positions in Germany: Equal opportunities (ipeqopt) is a major concern of the traditional left and looking after the environment (impenv) a major concern of the new left. The measurement may have a slight political bias and inflate the correlation between self-transcendence and the left-right scale. As a further consequence it can also distort the effect of openness to change.

There are other theoretically unexpected effects which are less counterintuitive. The negative effect of age on hedonism, for example, is consistent with the results of studies on generational change which have shown that younger German generations have become more materialistic and hedonistic than the preceding so-called postmaterialistic generations. We hesitate to interpret these theoretically more plausible findings as conclusive evidence as long as the doubts about our structural model persist. We have to wait and see whether our findings can be replicated and confirmed by other studies.

3.4 Summary: Inglehart vs. Schwartz

On balance there are three dependent variables for which all expected theoretical relations are confirmed (political interest, political activism, attitudes toward immigrants), but for the other five dependent variables, the equations contain not only unexpected effects but empirical findings that clearly contradict the theoretical expectations. A count of confirmed vs. rejected hypotheses yields 100% (6 of 6) correct predictions for the relation of Inglehart values and sociodemographic variables vs. 80% for the Schwartz values (12 of 15). The theoretically expected relationships with independent variables were confirmed for 71% (10 of 14) in the Inglehart case and for 57% (20 of 35) in the Schwartz case. Thus, in terms of correct predications, postmodernization theory performs better than the theory of basic human values.

The effects of Schwartz values are substantial for all external variables. The predictive power is lowest for life satisfaction ($\Delta R^2 = 7\%$) and highest for openness to immigration ($\Delta R^2 = 13\%$). For all other external variables chosen, Schwartz values can explain around 10% of variance above and beyond the sociodemographic variables.

The theoretically derived hypotheses for Inglehart values were supported by the data very well. In the case of Schwartz values, the results were mixed. Some hypotheses could be confirmed, others were rejected, and still other relationships that were not anticipated became apparent in the data.

The predictive power of the Schwartz values can partly be attributed to theoretically unexpected effects and may have been increased by the correction of attenuation which we could perform in the covariance structure model. In order to retain an acceptable fit of this model we had to create a new set of values – values which are similar to those of other studies, because they are based on the same set of indicators, but which are equivalent neither with the ten nor with the seven nor with other sets of values which have been identified in other studies so far. We also had to accept theoretically unexpected cross-loadings. Furthermore, several of our predictor variables had theoretically unexpected effects, this is particularly true for openness to change. Had we based our predictions in Table 9 only on those values which actually have the theoretically expected effect denoted in Table 4, the R-squares in Table 9 would almost certainly have decreased considerably. Though it may be misleading to qualify R^2 under these conditions as a measure of predictive power, our exploratory strategy has at least the advantage that we can also detect those effects of values which theoretically were not expected.

The partial success of postmodernization theory in explaining “church attendance”, “political activism”, and “life satisfaction” is related to a different problem. Technically speaking, Inglehart includes indicators in the measurement instruments of value orientations which are strongly related to or confounded with external variables. If, for example, the item *Importance of God* is used as an indicator of traditional values, it is not surprising at all that the value index correlates highly, say, with church attendance. This is sometimes called a tautological explanation. We do not use this expression, first because it is not tautological in a strict sense, second because the appeal to a tautology in empirical research is often conceived as an insult, and third because the problem can be easily explained without bitter remarks: We would strongly overestimate the influence of the value orientation if we do not specify a direct or indirect relationship²⁴ between the confounded indicator and the respective external variable. Typical symptoms of the problem are that a value indicator correlates higher with external variables than with other value indicators or that the best value indicator does not consistently display the highest correlation with external variables. The latter problem occurs in the Schwartz model, too, but in Inglehart’s measurement model these distortions are much stronger. “Happiness” and “signing a petition” are indicators of survival vs. self-expression values which in turn should explain life satisfaction and political activism. Happiness and life satisfaction, however, can be seen as indicators of well-being and “signing a petition” an

²⁴ In the example of church attendance we may either say that importance of God has a direct impact on church attendance because strong believers also participate more often (direct effect), or we may specify church attendance and importance of God as indicators of a further latent variable, i.e., religiosity.

indicator of political activism. Even though we did not include “signing a petition” into the index calculation of political activism, the problem remains that the value indicator is directly linked to political activism and not only indirectly via the value. Therefore, some of the effects are probably overestimated. Nevertheless, the encompassing theoretical framework and the large set of empirically confirmed hypotheses is the strength of Inglehart’s values theory. It is the result of a long and fruitful research that has always tried to understand and to explain value change as well as cultural change. Schwartz, on the other hand, has invested time and energy in the elaboration of a coherent value system and its operationalizations. He conceptualizes values as trans-situational goals or general guidelines that impact on more specific attitudes. That they can explain attitudes toward various objects has been shown in our analysis.

4. Summary and Conclusion

Theories of values and value change help us to understand differences between individuals and cultures. Yet social scientists have identified so many values during the last decades that the question arises of whether we really need them all. From this perspective, the two, presently, most prominent micro-level value theories have been investigated - the value theories proposed by Shalom Schwartz and Ronald Inglehart.

The World Value Survey 2005 includes all items for measuring the values put forth by Inglehart but only ten indicators for the values put forth by Schwartz. We have shown that the latter set of items is much too small to measure ten or five broadly defined values reliably. The European Social Survey 2004 includes 21 items of Schwartz’ Portrait Value Questionnaire and is better suited for that purpose but it contains none of Inglehart’s value indicators. Therefore, we had to use two different surveys for our comparisons, the World Value Survey 2005 and the European Social Survey ESS 2004. Comparisons of the internal and external validity of both theories were only possible across surveys. The analyses of Inglehart’s values were performed with the WVS data, the analyses of the Schwartz’ values with the ESS data.

Space constraints as well as the lack of comparable indicators in both datasets did not allow the analysis of more than seven external variables which are predicted by both theories. Therefore, near at hand is the objection that we did not choose the correct ones thereby leading us to not correctly assess the strengths of the theories. It could also be argued that we misunderstood the theory and derived false hypotheses. However, and to the best of our

knowledge, we have focused on external relationships in the present analyses that are either well established or at least under discussion.

Though the corresponding external variables always have a similar meaning in both surveys, most of them are operationalized in different ways. The better measurement quality of the ESS items as well the application of different statistical models may have shifted the odds slightly in favor of the theory of Shalom Schwartz. Moreover, our analysis was confined to West Germany – the only region in which we could approximately replicate Inglehart and Baker's (2000) factor pattern using the data from the WVS 2005. A final objection could be the fact that our models were much too simple as far as the relationships with external variables are concerned, in particular, the relationships between a value orientation and reported behavior. In the present analysis we followed the common practice in which direct effects of values are specified on attitude and behavior.

There are no doubts that the present study has room for improvement. Nevertheless, our analysis provides, by and large, an adequate description of the present state of the two value theories. Owing to Ronald Inglehart we have an important theory of value change which helps us to understand the ongoing changes in attitudes and behavior in the west and east. His theory makes relatively clear predictions about what will happen in countries like China or India if the economic growth should continue. During the last decades he has elaborated the relationship between values and external variables and, thereby, met the expectations of sociologists and political scientists, who are at least as much interested in their predictive power as in the values themselves. This also became apparent in the empirical analysis, where we could predict the effects in most of the cases correctly. The micro-level effects are significant but markedly smaller than the corresponding macro-level effects, and they are partially inflated by confounded indicators – indicators which are directly related to external variables.

Inglehart's theory is persuasive because it is parsimonious and informative; Schwartz' theory is persuasive because its measurement instruments are theoretically derived. The idea of Schwartz that there are more than four values conceptualized as the poles of two orthogonal dimensions is probably shared by many other scientists. It is also plausible that some values are more closely related to each other than others. It is a challenging task, however, to reconcile such a model with the requirements of classical measurement theory, which places an emphasis on discriminant validity and prefers pure over confounded indicators with cross-loadings. Empirical research has made a big step forward during the last

years, however, and this was also the reason why we could specify an acceptably fitting model with five values, which are similar to those in other published models. As a psychologist, Schwartz was much more concerned with the internal structure of his value system than Inglehart. Accordingly, it is not easy to derive hypotheses about the effects of values on attitudes and behavior from the theory of Schwartz. In this respect, the two-dimensional charts with the value circle can be misleading. Opposite values, for instance, do not always have opposite effects on external variables. Similar to suppressor variables, highly correlated adjacent values can completely change the signs of effects so that, as in our analyses, conservation and openness to change have the same effect on political orientations. Suppressor variables are usually discussed under the perspective that their omission has theoretically unpleasant effects. In our study, however, exactly the opposite is the case: The inclusion of adjacent values has turned the theoretically plausible negative correlation of openness to change and the left-right scale into a positive effect. A general lesson to be learned here is that small biases in the value measurement can dramatically change the effects of highly intercorrelated values on external variables and that a circular value structure is particularly sensitive to this problem. This is one of the reasons why quite a few of these hypotheses were disconfirmed. So far the research on the relations with external variables seems to be in an exploratory stage.

Overall, both theories still are in a developmental stage. They both lack desirable methodological qualities. For the adherents of the theory of Inglehart it is a prior task to present reliable and valid measurement instruments. The traditional/secular-rational dimension in particular has not only to be more adequately operationalized but also deeper embedded in the theory. As far as the theory of Schwartz is concerned, the theory has to be elaborated especially in specifying more precisely the predictions concerning attitudes and behavior.

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Appendix

Table A1

Measurement of the external variables, ESS 2004

Age	And in what year were you born?
Gender	Observation coding
Education	What is the highest level of education you have achieved? 1 = Primary or first stage of basic, 2 = lower secondary or second stage of basic, 3 = upper secondary, 4 = post secondary, non-tertiary, 5 = first stage of tertiary, 6 = second stage of tertiary
LEFT-RIGHT SCALE	In politics people sometimes talk of “left” and “right”. Using this card, where would you place yourself on this scale, where 0 means the left and 10 means the right? (polintr)
POLITICAL INTEREST	How interested would you say you are in politics –are you... 1 = very interested, 4 = not at all interested? (polintr)
POLITICAL ACTIVISM	Additive index of 7 dichotomous items: Contacted politician or government official last 12 months (contplt), Worked in political party or action group last 12 months (wrkprty), Worked in another organisation or association last 12 months (wrkorg), Worn or displayed campaign badge/sticker last 12 months (badge), Signed petition last 12 months (sgnptit), Taken part in lawful public demonstration last 12 months (pbldmn), Boycotted certain products last 12 months (bctprd), 1=yes, 2=no
OPENNESS TO IMMIGRATION	CFA measurement model, 3 indicators: To what extent do you think [country] should allow people of the <u>same race or ethnic group</u> as most [country’s] people to come and live here? (imsmetn), How about people of a <u>different</u> race or ethnic group from most [country] people? (imdfetn), How about people from the <u>poorer countries outside Europe?</u> (eimrcnt), 1 = allow many to come and live here – 4 = allow none
LIFE SATISFACTION	All things considered, how satisfied are you with your life as a whole nowadays? (stflife) 1=extremely unsatisfied, 10=extremely satisfied
CHURCH ATTENDANCE	Apart from special occasions such as weddings and funerals, about how often do you attend religious services nowadays? 1=every day, 7=never
ATTITUDES TOWARD GENDER EQUALITY	Men should have more right to a job than women when jobs are scarce (mnrgtjb) 1=agree strongly, 5=disagree strongly

Notes: The variable names in parentheses are those used in the original data set.

Table A2**Measurement of the external variables, WVS 2005**

Age	Can you tell me your year of birth, please? (V236), This means you are ____ years old. (V237)
Gender	Observation coding (V235).
Education	What is the highest educational level that you have attained? (V138) 1 = no formal education, 2 = incomplete primary school, 3 = complete primary school, 4 = incomplete secondary school: technical/vocational type, 5 = complete secondary school: technical/vocational type, 6 = incomplete secondary: university-preparatory type, 7 = complete secondary: university-preparatory type, 8 = some university-level education, without degree, 9 = university-level education, with degree
LEFT-RIGHT SCALE	In political matters, people talk of "the left" and "the right." How would you place your views on this scale, generally speaking? (V114) 1=left, 10=right
POLITICAL INTEREST	How interested would you say you are in politics? Are you ... 1 very interested, 2 somewhat interested, 3 not very interested, 4 Not at all interested (V95)
POLITICAL ACTIVISM	Additive index of 2 items: Joining in boycotts (V97), Attending peaceful demonstrations (V98), 1=have done, 2=might do, 3=would never do
OPENNESS TO IMMIGRATION	How about people from other countries coming here to work. Which one of the following do you think the government should do? (V124) 1 Let anyone come who wants to, 2 Let people come as long as there are jobs available, 3 Place strict limits on the number of foreigners who can come here, 4 Prohibit people coming here from other countries
LIFE SATISFACTION	All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied" where would you put your satisfaction with your life as a whole? (V22). 1 Completely dissatisfied, 10 Completely satisfied
CHURCH ATTENDANCE	Apart from weddings and funerals, about how often do you attend religious services these days? (V186.) 1=more than once a week, 7=never, practically never
GENDER EQUALITY	When jobs are scarce, men should have more rights to a job than women (V44) 1=agree, 2=neither, 3=disagree

Notes: The variable names in parentheses are those used in the original data set.

Tables and Figures

Table 1

Schwartz' ten basic human value types and the motivations behind them

Value type	Motivational emphasis
<i>Power</i>	Social status and prestige, control or dominance over people and resources
<i>Achievement</i>	Personal success through demonstrating competence according to social standards
<i>Hedonism</i>	Pleasure and sensuous gratification for oneself
<i>Stimulation</i>	Excitement, novelty and challenge in life
<i>Self-direction</i>	Independent thought and action - choosing, creating and exploring
<i>Universalism</i>	Understanding, appreciation, tolerance and protection for the welfare of all people and for nature
<i>Benevolence</i>	Preservation and enhancement of the welfare of people with whom one has frequent personal contact
<i>Tradition</i>	Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide
<i>Conformity</i>	Restraint of actions, inclinations and impulses likely to upset or harm others and violate social expectations or norms
<i>Security</i>	Safety, harmony and stability of society, or relationships, and of self

Source: Sagiv and Schwartz (1995: 438)

Figure 1: The Relations between the Ten Values

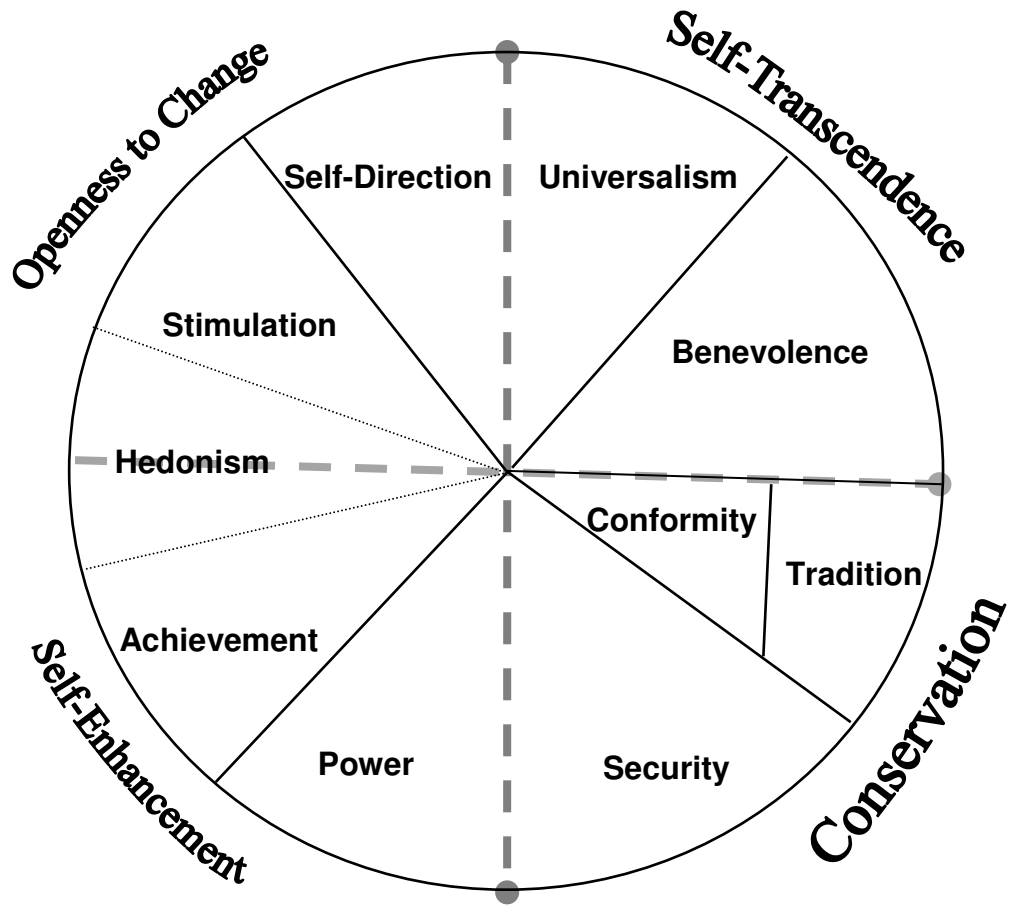


Table 2: The Measurement of the Inglehart Values in the WVS 2005

Traditional vs. Secular-Rational Values		
1	Importance of God	How important is God in your life? Please use this scale to indicate. 10 means “very important” and 1 means “not at all important. (10-point scale)
2	Autonomy Index ^a	Here is a list of [10] qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five! <i>(Points in brackets are added or subtracted if the respective item is mentioned)</i> ..., Independence (+1), ..., Determination, perseverance(+1), ..., Religious faith (-1), Obedience (-1) (5-point scale)
3	Abortion ^a	Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between, using this card: (1=never justifiable, ..., 10=always justifiable), Abortion ... (10-point scale)
4	National Pride ^a	How proud are you to be [French]? (1=very proud, ..., 5=not at all proud). (5-point scale)
5	Respect for Authority	I'm going to read out a list of various changes in our way of life that might take place in the near future. Please tell me for each one, if it were to happen, whether you think it would be a good thing, a bad thing, or don't you mind? (1= Good, 2=Don't mind, 3=Bad): ..., Respect for Authority, ... (3-point scale)
Survival vs. Self-expression Values		
1	Materialism-Postmaterialism Index ^b	People sometimes talk about what the aims of this country should be for the next ten years. On this card are listed some of the goals which different people would give top priority. Would you please say which one of these you, yourself, consider the most important? 1) Maintaining order in the nation 2) Giving people more say in important government decisions 3) Fighting rising prices 4) Protecting freedom of speech And which would be the next most important? (Scale derived from the two top priorities: 1= Materialists: aims 1) and 3) mentioned; 3= Postmaterialists: aims 2) and 4) mentioned; 2= other combinations mentioned. (3-point scale)
2	Happiness ^b	Taking all things together, would you say you are: 1=Very happy, 2=Rather happy, 3=Not very happy, 4=Not at all happy. (4-point scale)
3	Homosexuality ^b	Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between, using this card. (1=never justifiable, ..., 10=always justifiable):, Homosexuality (10-point scale)
4	Sign a petition	Now I'd like you to look at this card. I'm going to read out some forms of political action that people can take, and I'd like you to tell me, for each one, whether you have done any of these things, whether you might do it or would never under any circumstances do it:; Signing a petition. (3-point scale: 1=have done; 2=would do; 3=would never do. (3-point scale)
5	Interpersonal Trust	Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? (Code one answer): 1=Most people can be trusted, 2=Need to be very careful. (2-point scale)

a Low scores indicate traditional values.

b Low scores indicate survival values.

Table 3: The Human Values Scale in the ESS 2004

Value	Item # (according to its order in the ESS questionnaire) and Wording (Male Version)
Self-Direction (SD)	1. Thinking up new ideas and being creative is important to him. He likes to do things in his own original way (ipctiv). 11. It is important to him to make his own decisions about what he does. He likes to be free to plan and not depend on others (impfree).
Universalism (UN)	3. He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life (ipeqopt). 8. It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them (ipudrst). 19. He strongly believes that people should care for nature. Looking after the environment is important to him (impenv).
Benevolence (BE)	12. It is very important to him to help the people around him. He wants to care for their well-being (iphlppl). 18. It is important to him to be loyal to his friends. He wants to devote himself to people close to him (iplylfr).
Tradition (TR)	9. It is important to him to be humble and modest. He tries not to draw attention to himself (ipmodst). 20. Tradition is important to him. He tries to follow the customs handed down by his religion or his family (imprad).
Conformity (CO)	7. He believes that people should do what they're told. He thinks people should follow rules at all times, even when no one is watching (ipfrule). 16. It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong (ipbhprp).
Security (SEC)	5. It is important to him to live in secure surroundings. He avoids anything that might endanger his safety (impsafe). 14. It is important to him that the government insures his safety against all threats. He wants the state to be strong so it can defend its citizens (ipstrgv).
Power (PO)	2. It is important to him to be rich. He wants to have a lot of money and expensive things (imprich). 17. It is important to him to get respect from others. He wants people to do what he says (iprspot).
Achievement (AC)	4. It is important to him to show his abilities. He wants people to admire what he does (ipshabt). 13. Being very successful is important to him. He hopes people will recognize his achievements (ipsuces).
Hedonism (HE)	10. Having a good time is important to him. He likes to “spoil” himself (ipgdtim). 21. He seeks every chance he can to have fun. It is important to him to do things that give him pleasure (impfun).
Stimulation (ST)	6. He likes surprises and is always looking for new things to do. He thinks it is important to do lots of different things in life (impdiff). 15. He looks for adventures and likes to take risks. He wants to have an exciting life (ipadvnt).

Table 4: The Hypotheses

		AGE	EDUCATION	GENDER : Female		LEFT-RIGHT SCALE	POLITICAL INTEREST	POLITICAL ACTIVISM	OPENNESS TO IMMIGRANTS	LIFE SATISFACTION	CHURCH ATTENDANCE	GENDER EQUALITY
Traditional (vs. secular-rational) Values		+	-			+		-	-		+	-
Survival (vs. self-expression)Values		+	-			+	-	-	-	-		-
SELF-TRANSCENDENCE	Benevolence	+	+	+		-	+	+	+	+	+	+
	Universalism	+	+	+		-	+	+	+	+		+
OPENNESS TO CHANGE	Self-Direction	-	+			-				+	-	+
	Stimulation	-	+			-				+	-	+
Hedonism											-	+
SELF-ENHANCEMENT	Achievement	-	+	-		+				+		-
	Power	-	+	-		+				-		-
CONSERVATION	Security	+	-			+	+	-	-	-	+	-
	Conformity	+	-			+	+	-	-	-	+	-
	Tradition	+	-			+	+	-	-	-	+	-

Notes: "+" positive relation expected; "-" negative relation expected; empty cells: no relation expected/ theoretical relation unspecified.

Table 5: Replication of Inglehart and Baker (2000) with the German Data of WVS 2005, Principal Component Analysis, Standardized Factor Loadings

	West		East		Total	
	TRAD	SURV	?	?	?	?
Secular-Rational Values Indicators						
V192 God is very important	.660	-.191	.494	-.452	.507	-.518
Y003 Obedience over Independence	.488	.273	.494	.009	.536	.029
V204 Abortion is never justifiable	.595	.347	.726	.002	.720	.018
V209 R is very proud of nationality	.476	.060	.380	-.301	.418	-.109
V78 Respect for authority is good	.585	.066	.434	-.012	.464	.079
Self-Expression Values Indicators						
Y002 R is materialist	.273	.497	.469	.333	.431	.399
V10 R is unhappy	-.299	.600	-.019	.619	-.065	.600
V96 R would never sign a petition	.236	.479	.392	.377	.371	.406
V202 Homosexuality is never justifiable	.475	.574	.718	.160	.685	.267
V23 Need to be careful with people	-.016	.576	.105	.642	.103	.634
Explained Variance (%)	37.78%		36.18%		37.06%	

Notes: Forced 2-factor solution, Varimax rotation; pairwise deletion of missing data, N=953.

TRAD stands for the traditional/secular-rational and SURV for the survival/self-expression dimension.

Traditionalists have a high positive score on TRAD and security-oriented people a high positive score on SURV.

A question mark on the top of the last columns of the table indicates that the labels TRAD and SURV are inappropriate; R = respondent; high factor loadings are indicated in bold.

Table 6: Confirmatory Factor Analysis, Standardized Factor Loadings

	SELF-TRANS		CONSERV		SELF-ENH		HE		OPEN	
	WVS	ESS	WVS	ESS	WVS	ESS	WVS	ESS	WVS	ESS
ipeqopt		.459								
Ipudrst		.615								
Impenv	.724	.534								
Iphlppl	.674	.648								
Ipylfr		.552								
ipmodst				.444		-.333				
Imptrad	.379		.278	.513						
Ipfrule				.542						
Ipbhprp			.516	.696	.316					
Impsafe	-.120		.653	.632						
Ipstrgv				.512						
Imprich	-.486	-.271			.734	.566				
Ipspot				.218		.434				
Ipshabt						.659				
Ipsuces					.625	.722				
Ipgdtim							1.00*	.759		
Impfun								.726		
Impdiff										.680
Ipadvnt		-.416							.653	.796
Ipcrtiv	.364								.417	.527
Impfree										.512

* fixed to 1 for identification

Notes: ESS 2004, West German sample, pairwise deletion of missing data, N = 1,832; WVS 2005, West German sample, pairwise deletion of missing data, N=953; gray fields: ex post modifications (cross-loadings); Bold items are included in ESS and WVS, (ipbhprp, ipgdtim, imprich are identical in the two surveys, the other items differ in wording), for item wording in the ESS see Table 3; SELF-TRANS = Self-Transcendence, CONSERV = Conservation, SELF-ENH = Self-Enhancement, HE = Hedonism, OPEN = Openness to Change;
Model fit ESS: Chi2 = 961.4 with df = 175, RMSEA = 0.050 (p close = .591), CFI = .912
Model fit WVS: Chi2 = 160.6, df = 22, CFI = .918, RMSEA = .081, p-close = 0.000

Table 7: Correlations of the Latent Factors in the Schwartz Model

	SELF-TRANS	CONSERV	SELF-ENH	HE	OPEN
SELF-TRANS	.221				
CONSERV	.382	.531			
SELF-ENH	.061	.080	.498		
HE	.171	-.156	.531	.727	
OPEN	.426	-.223	.620	.778	.410

Notes: *Variances in the diagonal*; ESS 2004, West German sample.

Table 8: Relationship of Survival and Traditional Values with External Variables, Standardized Regression Coefficients

Values as Dependent Variables								
		SOCIODEMO						
	R ²			Age	Fem	Educ		
Sum Scores								
Traditional values (TRAD)	.156			.348	n.s.	-.112		
Survival values (SURV)	.126			.225	n.s.	-.220		
Factor Scores								
Traditional values (TRAD)	.120			.319	n.s.	-.071		
Survival values (SURV)	.092			.177	n.s.	-.201		
Values as Independent Variables								
		R ²	VALUES			SOCIODEMO		
	TOT	Δ VAL	DEMO	TRAD	SURV	Age	Fem	Educ
Sum Scores								
Left-right scale	.104	.059	.045	.213	.101	n.s	-.147	-.096
Political interest	.156	.047	.109	.154	-.228	.169	-.158	.236
Political activism	.272	.167	.105	-.104	-.395	n.s.	n.s.	.144
Openness to immigration	.154	.081	.073	n.s.	-.290	n.s.	.116	.119
Life satisfaction	.178	.157	.021	.178	-.443	n.s.	n.s.	n.s.
Church attendance	.328	.210	.118	.523	-.133	.180	.118	.079
Gender equality	.145	.041	.104	-.136	-.134	-.101	.128	.157
Factor Scores								
Left-right scale	.105	.060	.045	.249	.103	n.s.	-.149	-.104
Political interest	.140	.031	.109	.078	-.163	.175	-.155	.242
Political activism	.244	.139	.105	-.266	-.318	n.s.	n.s.	.160
Openness to immigration	.150	.077	.073	-.093	-.286	n.s.	.116	.124
Life satisfaction	.249	.228	.021	.178	-.451	n.s.	n.s.	n.s.
Church attendance	.334	.216	.118	.490	-.041 ^{n.s.}	.183	.120	.077
Gender equality	.147	.043	.104	-.183	-.142	-.095	.128	.160

Notes: WVS 2005, West German sample, pairwise deletion of missing values; n.s. = non significant ($p > .05$); method of factor score estimation: regression; SOCIODEMO = sociodemographic variables; Fem = female; Educ = education; TOT = total explained variance; Δ VAL= additional explained variance when values are added as independent variables into the model; DEMO = the explained variance when only sociodemographic variables are included as independent variables in the model; TRAD= traditional values; SURV = survival values.

Table 9: Relationship of the Schwartz Values with External Values, Standardized Regression Coefficients

Values as Dependent Variables										
	R ²	SOCIODEMO								
		Age	Fem	Educ						
Self-Transcendence (SELF-Conservation (CONSERV)	.085	.070	.224	.203						
Self-Enhancement (SELF-ENH)	.152	.358	.087	-.152						
Hedonism (HE)	.171	-.361	-.131	.165						
Openness to Change (OPEN)	.123	-.310	-.151	n.s.						
	.149	-.360	n.s.	.176						
Values as Independent Variables										
	R ²	VALUES							SOCIODEMO	
	TOT	ΔVAL	DEMO	SELF-	CON-	SELF-	HE	OPEN	Age	Fem Educ
Left-right scale	.159	.108	.051	-.468	.460	-.177	n.s.	.356	.143	-.037 .069
Political interest	.262	.078	.184	.307	-.212	n.s.	n.s.	n.s.	.211	-.211 .227
Political activism	.200	.118	.082	.366	-.328	n.s.	-.086	n.s.	n.s.	n.s. .161
Openness to immigration	.222	.130	.092	.494	-.274	n.s.	n.s.	-.180	-.257	n.s. .093
Life satisfaction	.079	.068	.011	.244	n.s.	n.s.	.301	-.210	n.s.	n.s. .082
Church attendance	.139	.085	.054	-.198	.399	.178	.269	.390	.063	.069 n.s.
Gender equality	.273	.096	.177	.348	-.442	.172	n.s.	-.206	-.211	.163 .149

Notes: ESS 2004 (Edition 3.2, released 02-02-2011), West German sample; pairwise deletion of missing values; n.s. = non significant ($p > .05$); SOCIODEMO = sociodemographic variables, Fem = female; Educ = education; TOT = total explained variance; Δ VAL= additional explained variance when values are added as independent variables into the model; DEMO = the explained variance when only sociodemographic variables are included as independent variables in the model.